REMARKS

Claims 1 – 3, 5 – 8, 10, 11, 13, 16, 17, 20 – 24, 26 – 29, 31 – 40, 43 – 53 and 55 – 57 are presently pending. Claims 10, 11, 13 and 56 have been withdrawn from consideration. In the above-identified Office Action, citing new grounds of rejection, the Examiner rejected Claims 1, 2, 5 – 8, 16, 17, 20, 21, 52, 53, and 57. Claims 1, 2, 5 – 7, 16, 20 and 57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rediker ('224) in view of Miers ('627). Claims 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Rediker ('224) in view of Miers ('627) and further in view of Waarts ('187). Claims 16 – 17, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rediker ('224) in view of Miers ('627) and further in view of Jiang *et al.* ('997). Claims 3, 22 – 24, 26 – 28, 31 – 40, 43 – 51, and 55 were objected to. Claims 29, 22 – 24, 26 – 28, 31 – 40, and 43 – 51 were allowed.

The indication of allowed and allowable subject matter is gratefully acknowledged. By this Amendment, although Claim 56 has been withdrawn, Claims 55 and 56 have been amended to address the objection thereto per the suggestion of the Examiner.

New Claims 59 – 63 have been added for consideration. These claims are drawn to a laser with an Er:YAG fiber laser medium and means for directly pumping the medium with a diode. Inasmuch as the prior art does not teach or suggest direct diode pumping of Er:YAG fiber lasers, these Claims should be allowable as well.

The currently pending claims are deemed to properly Claims patentable over the prior art. For the reasons set forth more fully below, reconsideration, allowance and passage to issue are respectfully requested.

As noted previously, the claimed invention addresses the need in the art for an eye-safe, high-quality, robust, cost-effective, compact, and light-weight laser that is readily scalable to high average power and high pulse energy.

The need in the art is addressed by the inventive laser which includes plural fiber laser oscillators, high-power laser pump sources coupled to said fiber laser resonators, and a cavity external to the fiber laser oscillators coherently combines plural laser beams output from the plural fiber laser oscillators into a single output laser beam. The invention is set forth in Claims of varying scope of which Claim 1 is illustrative. Claim 1 recites:

> 1. A robust scalable laser system comprising:
> a plurality of laser fibers;
> a high-power laser pump source coupled to each of said laser fibers; and
> an external cavity having an optical axis, and **beam-flattening optics**, said external cavity having a first lens, a single aperture, a second lens and a mirror located along the optical axis, said single aperture being of predetermined diameter and being located at focal points of the first and the second lenses. (Emphasis added.)

None of the references, taken alone or in combination, teach or render obvious the invention of Claim 1. That is, none of the references teach or suggest a laser system with, *inter alia*, beam flattening optics.

Acknowledging this, the Examiner asserted that while Rediker does not disclose beam-flattening optics, Miers shows beam-flattening optics 158. However, this assertion is not supported by the teaching of the reference. That is, element 158 of Miers is a 'collimator', not 'beam-flattening optics'. See col. 24, lines 19 – 21, which read:

> "An aspheric **collimating lens 158** for **collimating** the naturally diverging beam emitted by the laser diode 131 is placed in the beam path near the laser diode." (Emphasis added.)

As is known in the art, a 'collimating lens' is not a 'beam-flattening' lens. "**Collimated light** is light whose rays are nearly parallel, and therefore will spread slowly as it propagates." See http://en.wikipedia.org/wiki/Collimation. On the other hand, beam-flattening has to do with converting a Gaussian intensity distribution profile to a 'top-hat' intensity distribution profile. See *Beam Shaping in the Nonparaxial Domain Of Diffractive Optics* by M. Kuittinen *et al.*, APPLIED OPTICS, Vol. 36, No. 10, p. 2034 *et*

seq., (April 1997) and *Holographic Gaussian to Flat-Top Beam Shaping* by M. Miler *et al.* Opt. Eng. 42(11) 3114–3122 (November 2003); both of which are attached for the convenience of the Examiner. Hence, it is clear that the collimator of Miers is not a beam-flattening optic within the meaning of the Claims. Accordingly, inasmuch as the shortcomings of Miers and Rediker are not overcome by Jiang or Waarts, the rejected Claims (Claims 1, 2, 5 – 8, 16, 17, 20, 21 and 57) should be allowable.

Reconsideration, allowance and passage to issue are respectfully requested.

Respectfully submitted,
K. Spariosu *et al.*

By W. J. Benman
William J. Benman
Attorney for Applicants
Registration No. 29,014

WJB/ns

Benman, Brown & Williams
2049 Century Park East
Suite 2740
Los Angeles, CA 90067

(310) 553-2400
(310) 553-2675 facsimile